CLAIMS:

1. A method of scanning a light transmission means having an exit tip, comprising moving said tip in an elliptical pattern while varying the eccentricity of said elliptical pattern.

2. A method as claimed in claim 1, including varying said eccentricity by varying the length of one axis of said elliptical pattern.

3. A method as claimed in claim 2, including varying said eccentricity by varying the length of the minor axis of said elliptical pattern

4. A method as claimed in claim 1, including repeatedly varying said eccentricity between a minimum value and one.

5. A method as claimed in claim 1, including repeatedly varying said eccentricity from a minimum value to one and then back to said minimum value, and said portion is centred on the centre of said elliptical pattern.

6. A method as claimed in any one of the preceding claims, wherein said elliptical pattern has a major axis and minor axis in the ratio of approximately two.

7. A method as claimed in any one of the preceding claims, including modulating said eccentricity by modulating the minor axis of said elliptical pattern between positive and negative extremes, so that said tip moves in both clockwise and counterclockwise directions in the course of a single complete scan.

8. A method as claimed in any one of the preceding claims, including driving said tip with an X drive parallel to the major axis of said elliptical pattern and

with a Y drive parallel to the minor axis of said elliptical pattern, and synchronising at a constant phase to the X scan to allow interfacing to a standard raster display.

9. A method as claimed in claim 8, including deriving said Y drive by synchronously switching a delayed version of said X drive.

10. A method as claimed in any one of the preceding claims, wherein said light transmission means is an optical fibre.

11. A method as claimed in any one of the preceding claims, including driving said light transmission means magnetically.

12. A method as claimed in claim 11, including driving said light transmission means by means of a magnet attached to said light transmission means, wherein said magnet is magnetised axially and acted on by mutually perpendicular coils or windings.

13. A method as claimed in claim 12, wherein said mutually perpendicular coils or windings comprise a pair of drive coils located symmetrically each on opposite sides of a rest position of said magnet in a first plane, and a further drive coil located in a second plane perpendicular to said first plane; and the method further comprises:

sensing the position of said magnet by means of a sensing coil located in said second plane symmetrically opposite said magnet from said further drive coil;

obtaining an output signal from said sensing coil indicative of said position of said magnet; and

deriving an input signal for said further drive coil from said output signal;

wherein each of said pair of drive coils, said further drive coil, and said sensing coil are equidistant from said magnet in said rest position.

14. A method as claimed in claim 13, further including controlling a) said pair of coils in said first plane and b) said further coil and said sensing coil in said second plane, to swap functions so that said pair of drive coils in said first plane act as a drive coil and a sensing coil, and said further coil and said sensing coil in said second plane act as a pair of drive coils, whereby a further scan can be performed perpendicular to said elliptical pattern.

15. A method as claimed in claim 11, wherein said light transmission means is provided with a coat of magnetic material or located within a close-fitting magnetic tube.

16. A scanning apparatus, comprising:

a light transmission means having an exit tip;

first and second drive means for resonantly driving said light transmission means in orthogonal directions;

wherein said first and second drive means are operable to move said tip in an elliptical pattern while varying the eccentricity of said elliptical pattern.

17. An apparatus as claimed in claim 16, wherein said apparatus is operable to vary said eccentricity by varying the length of one axis of said elliptical pattern.

18. An apparatus as claimed in claim 16, wherein said apparatus is operable to vary said eccentricity by varying the length of the minor axis of said elliptical pattern

19. An apparatus as claimed in claim 16, wherein said apparatus is operable to repeatedly vary said eccentricity

between a minimum value and one.

20. An apparatus as claimed in claim 16, wherein said apparatus is operable to repeatedly said eccentricity from a minimum value to one and then back to said minimum value, wherein said portion is centred on the centre of said elliptical pattern.

21. An apparatus as claimed in any one of claims 16 to 20, wherein said elliptical pattern has a major axis and minor axis in the ratio of approximately two.

22. An apparatus as claimed in any one of claims 16 to 21, wherein said apparatus is operable to modulate said eccentricity by modulating the minor axis of said elliptical pattern between positive and negative extremes, so that said tip moves in both clockwise and counterclockwise directions in the course of a single complete scan.

23. An apparatus as claimed in any one of claims 16 to 22, wherein said apparatus is operable to drive said tip with an X drive parallel to the major axis of said elliptical pattern and with a Y drive parallel to the minor axis of said elliptical pattern, and to synchronise at a constant phase to the X scan to allow interfacing to a standard raster display.

24. An apparatus as claimed in claim 23, wherein said Y drive is derived by synchronously switching a delayed version of said X drive.

25. An apparatus as claimed in any one of claims 16 to 23, wherein said light transmission means is an optical fibre.

26. An apparatus as claimed in any one of claims 16 to

25, including a magnetic drive for driving said light transmission means.

27. An apparatus as claimed in claim 26, wherein said magnetic drive includes a magnet attached to said light transmission means and mutually perpendicular coils or windings, wherein said magnet is magnetised axially and acted on by said mutually perpendicular coils or windings.

28. An apparatus as claimed in claim 27, wherein said mutually perpendicular coils or windings comprise a pair of drive coils located symmetrically each on opposite sides of a rest position of said magnet in a first plane, and a further drive coil located in a second plane perpendicular to said first plane, and said apparatus further comprises a sensing coil for sensing the position of said magnet and located in said second plane symmetrically opposite said magnet from said further drive coil, wherein each of said pair of coils, said further coil and said sensing coil are equidistant from said magnet in said rest position, said sensing coil is operable to output an output signal indicative of said position of said magnet, and said apparatus is operable to derive an input signal for said further coil from said output signal.

29. An apparatus as claimed in claim 28, wherein said apparatus is operable to control a) said pair of coils in said first plane and b) said further coil and said sensing coil in said second plane, to swap functions so that said pair of drive coils in said first plane act as a drive coil and a sensing coil, and said further coil and said sensing coil in said second plane act as a pair of drive coils, wherein said apparatus can perform a further scan perpendicular to said elliptical pattern.

30. An apparatus as claimed in claim 26, wherein said

light transmission means is provided with a coat of magnetic material or is located within a close-fitting magnetic tube.

31. A scanning apparatus comprising:

an X drive for driving a light transmission means having an exit tip in an X direction;

a Y drive for driving a light transmission means having an exit tip in a Y direction;

an X drive input signal generator for providing an X drive input signal; and

a Y drive input signal generator for providing a Y drive input signal modulated by a modulating signal derived from said X drive input signal;

wherein said exit tip executes a scan pattern when driven simultaneously by said X drive and said Y drive.

32. A scanning apparatus comprising:

an X drive for driving a light transmission means having an exit tip in an X direction;

a Y drive for driving a light transmission means having an exit tip in a Y direction;

an X drive input signal generator for providing a square wave X drive input signal; and

a Y drive input signal generator for providing a Y drive input signal by generating a sawtooth signal and modulating said sawtooth signal with a modulating signal derived from said X drive input signal;

wherein said exit tip executes a scan pattern when driven simultaneously by said X drive and said Y drive.

33. An apparatus as claimed in claim 31, wherein said scan pattern is elliptical and has an eccentricity that is always greater than zero.

34. An apparatus as claimed in either claim 31 or 32, wherein said Y drive input signal generator is operable to generate said sawtooth signal such that said sawtooth signal is repeatedly inverted according to a trigger signal comprising a delayed version of said X drive input signal.

35. An apparatus as claimed in any one of claims 31 to 33, wherein said apparatus is operable to collect image data from a central portion of said scan pattern.

36. An apparatus as claimed in claim 34, wherein said apparatus is operable to collect image data from said central portion of said scan pattern corresponding to an exit tip speed of greater than or equal to approximately 87% of a peak exit tip speed.

37. An apparatus as claimed in any one of claims 31 to 35, including a magnetic drive for driving said light transmission means comprising a magnet attached to said light transmission means and mutually perpendicular coils or windings, wherein said magnet is magnetised axially and acted on by said mutually perpendicular coils or windings and said mutually perpendicular coils or windings comprise a pair of drive coils located symmetrically each on opposite sides of a rest position of said magnet in a first plane, and a further drive coil located in a second plane perpendicular to said first plane, and said apparatus further comprises a sensing coil for sensing the position of said magnet and located in said second plane symmetrically opposite said magnet from said further drive coil, wherein each of said pair of coils, said further coil and said sensing coil are equidistant from said magnet in said rest position, said sensing coil is operable to output an output signal indicative of said position of said magnet, and said apparatus is operable to

derive an input signal for said further coil from said output signal.

38. An apparatus as claimed in claim 36, wherein said apparatus is operable to control a) said pair of coils in said first plane and b) said further coil and said sensing coil in said second plane, to swap functions so that said pair of drive coils in said first plane act as a drive coil and a sensing coil, and said further coil and said sensing coil in said second plane act as a pair of drive coils, wherein said apparatus can perform a further scan perpendicular to said scan pattern.

39. An optical fibre endoscope, microscope or endomicroscope including a scanning apparatus as claimed in any one of claims 16 to 30.

40. An optical fibre endoscope, microscope or endomicroscope including a scanning apparatus as claimed in claim 31.

41. An optical fibre endoscope, microscope or endomicroscope including a scanning apparatus as claimed in any one of claims 32 to 38.

42. An optical fibre confocal endoscope, microscope or endomicroscope including a scanning apparatus as claimed in any one of claims 16 to 30.

43. An optical fibre confocal endoscope, microscope or endomicroscope including a scanning apparatus as claimed in claim 31.

44. An optical fibre confocal endoscope, microscope or endomicroscope including a scanning apparatus as claimed in any one of claims 32 to 38.